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Offender and victim 'journey-to-crime': Motivational differences among stranger rapists

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ABSTRACT

Purpose: To examine the variability in the 'journey-to-crime' and 'journey-to-victimization' in stranger rapes when disaggregated by offender motive. Using crime pattern theory as the theoretical framework, a series of pre-offense factors are used to explain these differences.

Methods: Two-step cluster analysis is first used to identify motive subtypes in 1009 stranger female rapes from a French police database. Kruskal-Wallis analyses then test for significant differences in distances traveled between the motivational groups. Finally, a series of negative binomial regressions are conducted to predict three distance measures: offender's residence to crime scene, victim's residence to crime scene, and victim's residence to offender's residence.

Results: The average distances traveled for both offenders and victims to the crime scene, and between their residences, varied by motive. Findings from the regression models indicated that while offender motive is important, environmental characteristics and victim activity at the time of the assault also predict the distances traveled for both individuals.

Conclusions: Determining the most likely motive of the offender, in conjunction with other offense characteristics that would be known at the time of investigation, has the potential to provide law enforcement officials with an indication of the unknown offender's geographic behavior in active rape cases.

1. Introduction

Stranger rapes often pose considerable challenges for law enforcement agencies (Beauregard & Martineau, 2017). Among concerns of sexual recidivism and the possibility of the offender escalating in the severity of his actions with subsequent victims, is the added complexity of community pressure that the police often face to identify the suspect. In the absence of physical evidence, eyewitness identification, or a confession that would link the offender directly to the crime, stranger rapes are often the most difficult for law enforcement to solve. Thus, without any other information, investigators often need to look closely at the offender's crime scene behavior in hopes of answering two questions central to the investigation: (1) *why* did the offender commit this crime (i.e., motive)? And, (2) how can this information be used to identify the at-large offender in such cases?

Another feature of the crime that might be helpful to investigators in active stranger rape cases is the geographic mobility associated with the event. One aspect of mobility that has attracted research attention, beginning in the 1930s (e.g., White, 1932) and becoming more popular in the 1970s onwards, is the journey-to-crime. The journey-to-crime typically refers to the direction and amount of distance that either the offender or the victim travel from his/her residence to the crime scene location (Rengert, 2004). While not a new phenomenon, LeBeau (1987b) notes that the literature on 'journey-to-rape' is much scarcer than it is for other crime types. The overarching conclusion that emerges from this small literature is that rapists have short crime trips, choosing to offend within only a few miles of their residence in *most* cases (e.g., Amir, 1971; Block, Galary, & Brice, 2007; Chopin & Caneppele, 2019a, 2019b; Davies & Dale, 1995; LeBeau, 1987b; Rossmo, Davies, & Patrick, 2003; Santtila, Laukkanen, & Zappala, 2007; Santtila, Laukkanen, Zappala, & Bosco, 2008; Warren et al., 1998). Although not as well documented, victims of rape have short crime trips as well, with most attacks occurring within close proximity of their residence (Amir, 1971; Block et al., 2007; Ceccato, 2014; Chopin & Caneppele, 2019a). For example, using police data from France, Chopin and Caneppele (2019b) found that more than 50% of the victims in their sample were assaulted within 0.75 km of their residence. Although these findings are valuable from an investigative standpoint, it is not yet

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clear if, and how, the journey-to-crime associated with stranger rape cases varies when analyzed in conjunction with crime scene factors. The goal of this study, then, is to combine crime scene behavior and spatial data in solved rape cases to better understand how such information can be pragmatically applied in police settings.

2. Literature review

2.1. Theoretical background

Rational choice theory (Cornish & Clarke, 1986), routine activities theory (Cohen & Felson, 1979), and the geometric theory of crime (Brantingham & Brantingham, 1981) – collectively known as crime pattern theory – provide a framework through which the spatial movements of both offenders and victims can be better understood. Cornish and Clarke (1986) stated that criminal events are deliberate acts whereby individuals make purposeful and rational decisions about whether to participate, and once committed to their execution, how these acts will unfold, including who/what the victim/target will be, and when and where the crime will take place. Central to this perspective is the idea that decision-making, particularly that which is relevant to illegal behavior, is a choice; one that is easily made when the offender believes that the benefits of participation clearly outweigh the costs associated with it (e.g., effort expended, risk of apprehension, subsequent punishment). Within this context, it is possible to better understand an offender's decision-making, including why he/she committed the specific type of crime (e.g., rape), and the decisions related to it (e.g., victim type, distance that needs to be traveled to search for him/her), by examining his/her motive.

Decades of research has typified rapists based on their motivations for offending (e.g., Barbaree, Seto, Serin, Amos, & Preston, 1994; Knight & Prentky, 1990). Common among most studies is the finding that rapists generally fall into one of the following motivational subtypes, based on their crime scene behavior: *opportunistic, compensatory*, *sadistic*, *power/control*, and *angry*. *Opportunistic* rapists are characterized by very little impulse control and perpetrate predatory acts that are often unplanned (Knight & Prentky, 1990). These offenders do not engage in extreme violence nor aggression during the offense, often using force only as a necessary response to victim resistance to ensure completion of the sexual act. Similarly, *compensatory* rapists are impulsive and they perpetrate attacks that involve very little aggression (Groth, 1979). However, what truly characterizes these rapists is that they often exhibit poor social skills, doubt their own desirability, and they tend to suffer from extreme feelings of inadequacy (Berger, 2000; Groth, 1979). While they are highly aroused by fantasies of the rape (Cohen, Seghorn, & Calmas, 1969), often their feelings of inadequacy diminish as a result of completing this sexual act (Robertiello & Terry, 2007). *Sadistic* sexual offenders are motivated to act out violent sexual fantasies on their victims (Groth, 1979). These offenders display a high degree of planning in their offenses and often show little to no remorse for their actions. They may commit several acts of torture that result in severe physical and/or psychological harm of their victims. *Power/control* rapists are known for exercising strength, authority, and control over their victims in order to assert their masculinity (Douglas, Burgess, Burgess, & Ressler, 2006; Hazelwood & Burgess, 1987). These rapists tend to engage in a moderate amount of physical and verbal abuse during the sexual attack (Groth, 1979; Hazelwood & Burgess, 1987) that may leave their victims physically, psychologically, and emotionally traumatized. Lastly, *angry* rapists perpetrate their crimes to express rage or hatred, release anger, or obtain revenge (Groth, 1979; Knight & Prentky, 1990; Pardue & Arrigo, 2008). These rapists tend to use extreme violence and force during the commission of their crimes, even if there is no resistance from the victim (Palermo, 2003; Robertiello & Terry, 2007). Thus, given these common motives, most rapists will make a series of decisions both before and during the commission of the crime to ensure that they achieve their desired goal, whichever it may be. Besides motivation, environmental and situational factors can also influence an offender's criminal decision-making, especially as it pertains to his/her search for victims.

Often, rapists' geographic behavior is constrained by the availability of 'suitable' victims. The value or desirability of the target will, in large part, be determined by the offender's motive for committing the crime. For example, an *opportunistic* rapist will judge a potential victim's desirability based primarily on the situational conditions present at the time that may be conducive to an assault. This contrasts with a *sadistic* rapist who typically desires victims who possess very specific characteristics. The visibility and accessibility of the victim are likely determined by his/her routine activities, which are affected by temporal and seasonal variations. Thus, the environmental backcloth (see Brantingham & Brantingham, 1993) dictates the activities that take place in any given location, and the offender factors this knowledge into his/her spatial decision-making when searching for victims. The motive for committing the offense, then, combined with the routine activities of both offenders and victims, and where and when they take place, all play a role in the journey-to-crime and to victimization.

2.2. Correlates of crime journeys among extrafamilial rapists and their victims

In addition to motive and the routine activities of offenders and victims, several offense characteristics influence the journey-to-rape (for a comprehensive review, see Beauregard, Proulx, & Rossmo, 2005). For example, LeBeau (1987a) observed a relationship between the offender's method of approaching his victim and the amount of distance traveled. Offenders who assaulted victims within their own residence were likely to have shorter crime journeys. In terms of victim choice, Duwe, Donnay, and Tewksbury (2008) found that offenders who target stranger victims tended to travel farther to commit their crime than when the victim was previously known to them. Environmental characteristics also play a role in the offender's journey-to-crime. Studies have found that rapists tend to travel farther distances when rapes occur in the evening or throughout the night, on the weekend, and during the winter months (Ceccato, 2014; Gabor & Gottheil, 1984; Warren et al., 1998). In terms of the spatial aspect, stranger rapists have been found to prefer attack locations close to parks, forested areas, or interstitial places characterized by poor visibility, an easy escape route (Ceccato, 2014), and where the risk of interruption is low (Ceccato, Wiebe, Eshraghi, & Vrotsou, 2017; Quinsey & Upfold, 1985). Furthermore, attacks, specifically those within the inner city, have been found to occur most commonly near alcohol selling outlets, or a licensed restaurant or bar (Ceccato, 2014; Ceccato, Li, & Haining, 2019).

Curiously, despite the equally important role that the victim plays in rape events, very few studies have examined the offense characteristics that influence the journey from his/her residence to the crime scene. In their study, Ceccato and colleagues (2017) investigated the situational conditions preceding rapes that took place close to, versus far away from, the victim's home. In rapes where the journey-to-victimization was quite far, victims were most commonly engaged in social activities located in inner city areas characterized by a concentration of entertainment venues, bars, and restaurants. Following the routine activity perspective, in cases where the victim was raped close to her home, she was most often engaged in activities associated with everyday life (e.g., school, work, sport and leisure activities). More recently, Chopin and Caneppele (2019b) investigated the individual and environmental factors associated with the victim's mobility in extrafamilial sexual assaults. These researchers found that child victims (younger than 20 years old) were more likely to be sexually assaulted closer to home when the offender is known to the victim, and when the rape took place in a business (i.e., commercial) land use area or close to a means of transport.

Lastly, no studies, to our knowledge, have investigated the offense characteristics associated with a third distance measure: the journey

from the offender's residence to the victim's residence. This is certainly a limitation of this small literature as this measure, and the offense characteristics that influence it, could add value to the investigation of stranger rapes as well. Taken together, the current study addresses the aforementioned gaps in the literature by exploring the following research questions:

1. What motive subtypes are identifiable among a large sample of stranger rapists of adult females using information that would only be observable to investigators during an active investigation?
2. Does the distance traveled among both offenders and victims from their home base to the crime site, as well as in relation to one another, vary when disaggregated by motive?
3. What offense characteristics predict the distances traveled by offenders and victims in cases of stranger rape?

3. Methodology

3.1. Data

This study is based on a sample of 1009 cases of solved rapes that were committed in France between 1979 and 2018. These data were obtained from a national police database that includes information on the geographic and crime scene behavior of these events, as well as the individuals involved in these crimes. Information about each rape was collected by police detectives, coroners, and psychologists during the investigation, and was subsequently entered into the police database by crime analysts who are experts in extrafamilial sexual crimes.

The legal definition of rape has changed over the years in France. Because we used data distributed over a 40-year period, we decided to use an operational definition, rather than relying on the legal definition, to identify rape cases. For the purpose of the current study, rape is operationalized as the occurrence of vaginal and/or anal penetration with a penis and/or foreign object(s) (i.e., inanimate objects used to perform vaginal and/or anal penetration).

All of the cases involved victims and offenders who had an extrafamilial and/or stranger relationship, implying that they did not have contact with one another prior to the time that the crime took place. Because past research has shown that assaults involving child victims are very different from those involving adults in terms of crime commission processes and distances traveled to the crime (see, e.g., Beauregard, Stone, Proulx, & Michaud, 2008; Chopin & Beauregard, 2019; Chopin & Caneppele, 2019a, 2019b), we decided to select only those cases that involved a victim aged 16 years or older.[1] Furthermore, Chopin and Caneppele (2019b) found that mobility patterns vary between male and female victims. Consequently, we decided to include only cases involving female victims. In addition to the selection criteria outlined above, only cases were included that had available addresses for the offender's residence, the victim's residence, and the crime scene, and where the distance between any of these locations was less than 100 km (see, also, Chopin & Caneppele, 2019a). This threshold was used to avoid the influence of outliers on the results.[2]

The victims in this sample, on average, were 31.16 years old (SD = 16.15), with the eldest victim being 94 years old. The majority of the victims were in a relationship (67.60%) at the time of the crime. In terms of activities at the time of the offense, 20.30% of victims were involved in a social activity (e.g., at a bar with friends), 14.46% of them consumed alcohol, and 4.85% consumed drugs immediately prior to the attack. Offenders were aged 27.39 years (SD = 11.12), on average, with the eldest offender being 65 years old. The majority of offenders were in a relationship (55.80%) at the time of the offense and did not live alone (87.10%). A minority of the offenders (16.00%) engaged in paraphilic behavior (i.e., exhibitionism, voyeurism, transvestism, sadism, masochism, fetishism), and 19.50% of them had a previous criminal history. In terms of activities that they engaged in at the time of the offense, some offenders consumed alcohol (27.10%) and drugs (15.50%) in the hours prior to the crime.

3.2. Measures

The dependent and independent variables were chosen based on crime pattern theory principles as well as the literature presented above. Three continuous dependent variables were of interest in the current study: (1) the distance between the offender's residence and the crime scene (O−C); (2) the distance between the victim's residence and the crime scene (V−C); and, (3) the distance between the offender's residence and the victim's residence (O−V). All of these distances were Euclidian distances measured in meters.[3]

3.2.1. Temporal factors

The environmental criminology literature on sexual crimes has emphasized the importance of timing in the decision-making process of sexual offenders in terms of how far they travel to hunt for their victims and where they choose to commit their crimes (e.g., Hewitt, Beauregard, & Davies, 2012; Santtila et al., 2007; Warren, Reboussin, & Hazelwood, 1995). Timing influences the movements of victims as well (see Ceccato et al., 2017), including how far they are able and willing to travel from one activity node to another, as opportunities to engage in their routine activities – and thus their susceptibility to victimization – vary according to the time of the day, day of the week, and season of the year. Six dichotomous ($0 = no, 1 = yes$) variables that related to the timing of the offense were selected: (1) crime took place during the daylight hours (i.e., 6 am-6 pm); (2) crime took place during the weekend (i.e., Friday night until Sunday at midnight); (3) crime took place during the spring season; (4) crime took place during the summer season; (5) crime took place during the fall season; and, (6) crime took place during the winter season.

3.2.2. Environmental characteristics

Scholars have previously noted that a better understanding of how offenders search for victims and choose their crime sites requires an examination of offender modus operandi, temporal factors, as well as the environment (Beauregard, Rebocho, & Rossmo, 2010; Hewitt et al., 2012). Specifically, Brantingham and Brantingham (1978) theorized that the physical (e.g., land use type and sub-types) and social (e.g., deserted versus busy gathering space) environment in any given location sends signals to offenders about its characteristics, including who occupies the space and when, and these cues are then used by the offender to search for and locate potential victims. Similarly, victims travel farther and shorter distances from their home base to specific physical locations that allow for their routine or leisure activities to be held. Thus, the environmental characteristics of the crime site location, particularly if the offender first encountered the victim there as well, can explain why they intersected in both time and space, and how far they needed to travel in order to do so. Seven dichotomous variables that describe the crime scene where the rape occurred were included: (7) crime took place in a residential setting (e.g., victim's residence, offender's residence, single-family dwelling, multi-family dwelling, third-party residence); (8) crime took place in a commercial setting

[1] This cut-off age is used in most studies that focus on sexual crime to make the distinction between adult and child victims (see, e.g., Chopin & Beauregard, 2019; Leclerc, Wortley, & Smallbone, 2011).

[2] Cases where the distance between the offender's residence, the victim's residence, and the crime scene exceeded 100 km represented less than 5% of the population.

[3] Similar to the research conducted by Block et al. (2007), meters were used instead of (half) miles or kilometers because the travel distance was quite short for most incidents.

(e.g., victim's and/or offender's place of work); (9) crime took place in an indoor public place (e.g., school, library, hospital, public washroom, theatre, religious facility, public swimming pool); (10) crime took place in a parking lot; (11) crime took place outdoors (i.e., residence front/back yard, play space, green space, jogging/bike path, public park, wooded area, alley); (12) crime took place in a deserted place (i.e., nobody could see nor interrupt the offense); and, (13) the encounter, crime, and victim release (ECR) took place in the same location.

3.2.3. Offender motivation type

Both rational choice and routine activities theorists presume that some individuals are already motivated to commit a crime, and that this motivation largely dictates their decisions about where, when, and how crimes are committed once presented with an opportunity to do so. These series of decisions are made in an effort to increase anticipated rewards (i.e., the goal(s) that the offender has at the outset of the crime) while minimizing perceived risks (Cornish & Clarke, 1986). To classify the goal, or motivation for committing the crime among 1009 offenders, two-step cluster analysis was performed. Variables were selected to classify offenders according to existing rapist motive subtypes as described above (see Robertiello & Terry, 2007, for a more comprehensive review). Importantly, these variables were also chosen because they would be observable to law enforcement officials during an active investigation (i.e., would not require any information from the offender in order to determine motive). This analysis yielded a four-cluster solution (see Table A.1 in the Appendix).

Cluster 1 – *compensatory* rapist (n = 412; 40.83%) – described an offender who was generally unfamiliar with the crime location, did not target the victim, and generally used a con (non-coercive) approach strategy. This offender never tortured the victim and he was unlikely to perform anal penetration, perpetrate acts of psychological terror, nor inflict severe/extreme physical injuries on the victim. Cluster 2 – *angry/power* rapist (n = 324; 32.12%) – suggested an offender who was generally unfamiliar with the crime location, but who targeted the victim prior to the attack and who used a blitz (coercive) approach strategy. This offender did not torture the victim and he was the least likely to perform anal penetration. Overall, very few of these rapists engaged in either psychological terror or the infliction of severe/extreme physical injuries on their victim. Cluster 3 – *opportunistic* rapist (n = 202; 20.01%) – corresponds to an offender who was familiar with the crime scene prior to the attack, but who did not target their victims ahead of time. The majority of these offenders used a non-coercive (con) approach with their victim. None of these offenders engaged in torture, and only a few used psychological terror and/or inflicted severe or extreme injuries on their victim. Cluster 4 – *sadistic* rapist (n = 71; 7.04%) – suggested an offender who was generally unfamiliar with the crime scene prior to the time of the offense. Interestingly, these offenders did not specifically target their victims and they opted for the non-coercive (con) approach in the majority of cases. Sadists always engaged in torture and they were more likely to perpetrate anal penetration, psychological terror, and inflict severe/extreme physical injury on their victims. Motive sub-types of (14) *compensatory;* (15) *angry/power;* (16) *opportunistic;* and, (17) *sadistic* were used as dichotomous independent variables in subsequent analyses.

3.2.4. Victim activity at time of offense

According to the routine activity theory (Cohen & Felson, 1979), crime occurs when there is an intersection in time and space of a suitable victim and a motivated offender, in the absence of a *capable* guardian. Because victims need to travel from their home base to specific physical locations to participate in their daily activities, and motivated offenders must travel to those same locations to encounter suitable victims, the type of activity immediately preceding the offense will influence the travel patterns of both individuals. Four dichotomous variables describe the type of activity that the victim was engaged in at the time of the offense: (18) domestic activities/sleeping; (19) traveling/driving; (20) socializing with friends; and, (21) prostitution.

3.3. Analytic strategy

To answer our research questions, the data were analyzed in two stages. First, to determine whether the average distances traveled varied by offender motive, we used the Kruskal-Wallis test. This non-parametric test is used to determine whether there are statistically significant differences between two or more independent groups (i.e., motive type) based on a continuous variable (i.e., distance traveled). Second, to test the relationship between distance traveled and pre-offense characteristics, we used both bivariate and multivariate analyses. Bivariate analyses (i.e., Mann-Whitney test[4]) were first performed to examine the differences between the dependent (average distances) and independent variables. Using only the significant variables at the bivariate level ($p \leq .05$), a sequential negative binomial logistic regression[5] was then performed for each dependent variable. This was done not only to better understand the impact of each independent variable while taking into account the other significant variables in the model, but also to identify which of the four groups of variables (i.e., temporal factors, environmental characteristics of the crime scene, offender motivation type, and victim activity at the time of the offense) explained more of the variance in distance traveled.

4. Results

4.1. Offender motivation and travel distances

Table 1 presents the results of the Kruskal-Wallis analyses that tested for significant differences in distances traveled between the four motivational groups. Findings indicated that there are significant differences across all four groups in terms of the average distances traveled for each of the following parameters: distance between offender's residence and crime scene; distance between victim's residence and crime scene; and, the distance between the offender's residence and victim's residence. In terms of the first parameter, *angry/power* rapists ($H(3) = 28.66$, $p = .000$) traveled the farthest distance from their residence to the crime scene in comparison to rapists who have other motivations. In terms of journey to victimization, victims of *opportunistic* ($H(3) = 38.75$, $p = .000$) rapists tend to travel the greatest distance in comparison to rapists who have other motivations. Finally, when analyzing the distance between the offender's and victim's residence, *angry/power* rapists and their victims tend to live the farthest apart ($H(3) = 7.65$, $p = .047$).

4.2. Travel distances and offense characteristics

4.2.1. Bivariate analyses

Table 2 presents the results of the bivariate analyses between three dependent variables (i.e., O—C, V—C, O—V) and four groups of independent variables. In terms of the first dependent variable, distance between offenders' residences and the crime scene, our findings indicated that when the crime occurred during daylight hours, offenders traveled farther ($Z = -2.27$, $p = .015$). When the rape took place in a residential area, offenders traveled less ($Z = -5.32$, $p = .000$). Conversely, when rapes occurred outdoors ($Z = -3.66$, $p = .002$) and in deserted places ($Z = -1.91$, $p = .039$), offenders traveled farther. In terms of motivation, we found that *opportunistic* ($Z = -5.01$, $p = .000$) and *compensatory* ($Z = -3.99$, $p = .000$) rapists traveled significantly

[4] This non-parametric test was chosen because the dependent variables did not follow a normal distribution.

[5] Sequential negative binomial logistic regression was chosen instead of multiple regression because the dependent variables did not follow a normal distribution.

Table 1
Kruskal-Wallis test of average distances traveled by offender motivation.

Average distances (km)	*Compensatory*	*Angry/power*	*Opportunistic*	*Sadistic*
Distance between offender's residence and crime scene[a,b]	11.09*	12.97*	9.66*	12.04*
Distance between victim's residence and crime scene[a,c]	3.26***	6.42***	6.79***	5.76***
Distance between offender's and victim's residence[a,d]	9.50***	10.38***	4.92***	9.12***

Notes. *$p \leq .05$; ***$p \leq .001$.
[a] Mean.
[b] H = 28.66, $df = 3$, and $p < .001$.
[c] H = 38.75, $df = 3$, and $p < .001$.
[d] H = 7.65, $df = 3$, and $p < .05$.

Table 2
Bivariate analyses between independent and dependent variables ($N = 1009$).

	O-C		Mann-Whitney test Z-Score	V-C		Mann-Whitney test Z-Score	O-V		Mann-Whitney test Z-Score
	No	Yes		No	Yes		No	Yes	
Temporal factors									
Daylight	8032.96	10,699.74	−2.27*	5192.42	5902.42	−0.29	10,794	13,341.92	−1.761
Weekend	9443.12	8030.75	−1.55	5262	5713.70	−0.99	11,953.47	11,171.06	−1.498
Spring	8942.01	8857.55	−0.17	5426.15	5437.53	−0.78	11,791.23	11,195.65	−0.8
Summer	9120	8397.42	−0.96	5514.11	5205.13	−0.08	11,734.38	11,402.99	−0.146
Fall	8782.58	14,857.99	−1.02	5411.41	5482.59	−0.11	11,264.02	12,800.04	−1.872
Winter	8848.67	9164.63	−0.21	5368.91	5631.29	−0.83	11,783.22	11,171.06	−1.253
Environmental characteristics									
Residential	10,121.17	7737.37	−5.32***	7233.04	3649.78	−12.00***	13,250.08	10,058.22	−4.93***
Commercial	8838.36	9930.45	−2.09*	5199.23	8209.78	−1.21	11,394.88	14,647.23	−2.103*
Indoor public place	8938.36	8601.62	−0.13	5479.33	4502.29	−0.73	11,812.49	8525.19	−1.208
Parking lot	9138.63	5811.64	−0.58	5408.49	5721.68	−0.26	11,856.79	8589.50	−0.895
Outdoors	8220.15	9860.90	−3.66**	4692.69	6416.39	−7.97***	10,590.79	13,054.27	−3.398***
Deserted place	9911.16	8350.12	−1.91*	6558.53	4777.72	−1.52	13,060.21	10,826.01	−1.954*
ECR	9394.39	8240.66	−1.73	6942.32	3254.01	−11.02***	12,860.09	9893.99	−5.257***
Offender motivation type									
Opportunistic	9920.21	4929.11	−5.01***	5093.68	6768.51	−5.54***	12,137.21	9668.97	−1.633
Sadistic	8905.58	9124.73	−0.90	5403.92	5760.03	−0.29	11,612.80	12,043.08	−0.186
Compensatory	7913.31	10,381.18	−3.99***	4745.50	6919.36	−0.48	10,724.63	12,973.92	−2.764**
Angry/Power	8643.19	9508.36	−0.60	6453.98	3261.91	−5.27***	11,902.84	11,093.88	−1.408
Victim activity at time of offense									
Domestic activities/sleeping	9082.91	8133.12	−1.67	6270.62	1333.32	−12.87***	11,039.92	17,313.99	−4.173***
Traveling/driving	8159.58	16,079.98	−5.57***	5233.13	7270.34	−4.24***	11,039.92	17,313.99	−4.989***
Socializing with friends	8965.53	7604.24	−1.29	5357.24	7550.61	−3.93***	11,577.44	13,584.24	−1.963*
Prostitution	8795.45	10,554.92	−3.73***	5197.26	8444.51	−2.81**	11,388.09	14,961.37	−3.112**

Notes. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.
O-C = average distance in meters between offenders' residences and crime scenes.
V-C = average distance in meters between victims' residences and crime scenes.
O-V = average distance in meters between victims' residences and offenders' residences.

less distance from their residence to the crime scene in comparison to the other rapists. Finally, when victims were traveling/driving at the time of their attack ($Z = -5.57$, $p = .000$) or engaging in prostitution ($Z = -3.73$, $p = .000$), rapists tended to travel farther.

Findings regarding the second dependent variable, which measures journey to victimization, suggest that when victims were assaulted in a residential area ($Z = -12.00$, $p \leq 0.000$), and when the encounter, crime, and victim release occurred in the same location ($Z = -11.02$, $p = .000$), victims traveled significantly less distance. Conversely, when rapes occurred outdoors ($Z = -7.97$, $p = .000$), victims tended to travel farther distances from their home to the crime location. In terms of offender motivation, victims of *opportunistic* rapists ($Z = -5.54$, $p = .000$) traveled farther from their home to the crime scene, while victims of *angry/power* rapists ($Z = -5.27$, $p < .001$) traveled significantly far less. In terms of victim activities, those who were assaulted during domestic activities/sleeping tended to travel less ($Z = -12.87$, $p = .000$), while those who were assaulted during traveling/driving ($Z = -4.24$, $p = .000$), socializing with friends ($Z = -3.93$, $p = .000$), and engaging in prostitution ($Z = -2.81$, $p = .012$), traveled farther.

In regards to the final dependent variable, we found that when rapes occurred in residential areas ($Z = -4.93$, $p = .000$), in the same location as the encounter and victim release ($Z = -5.25$, $p = .000$), or in a deserted place ($Z = -1.95$, $p = .046$), the average distance between the victims' and offenders' residences is less than if these characteristics were not present. Similarly, when the victim was involved in domestic activities or was sleeping at the time of the attack ($Z = -4.97$, $p = .000$), there was less distance between her residence and that of the offender. Conversely, when rape occurred in a commercial area ($Z = -2.10$, $p = .043$) or outdoors ($Z = -3.39$, $p = .001$), there was a greater distance between the victim's and offender's residence. In terms of motivation, when the offender was a *compensatory* rapist ($Z = -2.76$, $p = .007$), there was a greater distance between his residence and that of the victim. Lastly, when the victim was traveling/driving ($Z = -4.98$, $p = .000$), socializing with friends ($Z = -1.96$, $p = .05$), or was engaging in prostitution ($Z = -3.11$, $p = .002$), the distance between the offender's and victim's residence was greater in comparison to those cases where these characteristics were not present.

Table 3
Negative binomial sequential regression with the average distance between the offender's residence and the crime scene as the dependent variable (N = 1009)

	Model 1		Model 2		Model 3		Model 4	
	β	*S.E.*	β	*S.E.*	β	*S.E.*	β	*S.E.*
Daylight	0.287***	*0.066*	0.265***	*0.068*	0.188**	*0.069*	0.174**	*0.069*
Residential			−0.251**	*0.082*	−0.258***	*0.080*	−0.262***	*0.085*
Commercial			−0.114	*0.14*	0.05	*0.143*	−0.007	*0.148*
Outdoor			0.045	*0.085*	0.035	*0.082*	−0.032	*0.085*
Deserted place			−0.133*	*0.067*	−0.108	*0.067*	−0.121	*0.067*
Opportunistic					−0.638***	*0.089*	−0.626***	*0.090*
Compensatory					0.044	*0.071*	0.056	*0.071*
Traveling/driving							0.018	*0.093*
Prostitution							0.641***	*0.108*
Constant	8.991***	*0.038*	9.184***	*0.091*	9.274***	*0.102*	9.228***	*0.104*
Likelihood Ratio Chi^2	18.957***		42.213***		101.404***		142.612***	
Log Likelihood	−10,177.607		−10,165.979		−10,136.384		−10,115.78	
AIC	20,359.215		20,343.979		20,288.768		20,251.559	
AICc	20,359.227		20,344.043		20,288.912		20,251.78	
BIC	20,369.048		20,373.459		20,328.102		20,300.726	

Note. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

4.2.2. Multivariate analyses

Table 3 presents the findings of the negative binomial sequential regression analyses with respect to the distance between the offender's residence and the crime scene. Model 1 includes only the temporal characteristics. Results show that in rapes perpetrated during daylight hours (β = 0.287, p = .000), the distance between the offender's residence and the crime scene was likely to be greater as compared to rapes that occurred during the night. Model 2 introduces environmental characteristics. The variable that was significant in Model 1 remained significant in Model 2. In cases where rape occurred in residential areas (β = −0.251, p = .008) or in deserted locations (β = −0.133, p = .047), the distance between the offender's residence and the crime scene was likely to be less as compared to cases involving other environmental characteristics. Model 3 introduces offender motivation classifications. Compared to Model 2, all of the variables remained significant with the exception of the deserted location. In cases involving *opportunistic* rapists (β = −0.638, p = .000), the distance between the offender's residence and the crime scene was likely to be less as compared to cases involving other offender motivations. Model 4 introduces victims' activities at the time of attack. All of the variables that were significant in Model 3 remained significant in Model 4. In cases where victims were engaging in prostitution (β = 0.641, p = .000), the distance between the offender's residence and the crime scene was likely to be greater as compared to cases involving other victim activities.

Table 4 presents the findings of the negative binomial sequential regression analyses with respect to the distance between the victim's residence and the crime scene. Model 1 includes only the environmental characteristics. Results show that in rapes perpetrated in a residential area (β = −0.865, p = .000), outdoors (β = −0.174, p = .000) or in the same location as the encounter and victim release (β = −0.895, p = .000), the distance between the victim's residence and the crime scene was likely to be less as compared to cases with other environmental characteristics. Conversely, in rape cases perpetrated in a commercial area (β = 0.603, p = .000), the distance between the victim's residence and the crime scene was likely to be greater as compared to cases with other environmental characteristics. Model 2 introduces offender motivation classifications. As compared to Model 1, all of the variables in Model 2 remained significant with the exception of whether the rape took place outdoors. In cases involving *opportunistic* rapists (β = 0.147, p = .034), the distance between the victim's residence and the crime scene was likely to be greater as compared to cases involving other characteristics. Conversely, in cases involving *angry/power* rapists (β = −0.533, p = .000) the distance between the victim's residence and the crime scene was likely to be less as compared to cases involving other characteristics. Model 3 introduces the victim's activity at the time of attack. All of the variables that were significant in Model 2 remained significant in Model 3. In cases where victims were involved in domestic activities/sleeping (β = −0.931, p = .000), the distance between the victim's residence and the crime scene was likely to be less, but when victims were traveling/driving (β = 0.366, p = .000), the distance between their residence and the crime scene was likely to be greater as compared to cases involving other characteristics.

Table 4
Negative binomial sequential regression with the average distance between the victim's residence and the crime scene as the dependent variable (N = 1009)

	Model 1		Model 2		Model 3	
	β	*S.E.*	β	*S.E.*	β	*S.E.*
Residential	−0.865***	*0.083*	−0.785***	*0.084*	−0.467***	*0.094*
Commercial	0.603***	*0.119*	0.692***	*0.120*	0.672***	*0.126*
Outdoor	−0.174*	*0.084*	−0.129	*0.084*	−0.096	*0.080*
ECR	−0.895***	*0.064*	−0.838***	*0.064*	−0.591***	*0.074*
Opportunistic			0.147*	*0.084*	−0.014	*0.087*
Angry/Power			−0.533***	*0.073*	−0.698***	*0.075*
Domestic activities/ sleeping					−0.931***	*0.111*
Traveling/ driving					0.366***	*0.110*
Socializing with friends					0.291	*0.180*
Prostitution					0.175	*0.129*
Constant	9.276***	*0.083*	9.293***	*0.085*	9.159***	*0.089*
Likelihood Ratio Chi^2	312.232***		381.283***		475.536***	
Log Likelihood	−9529.879		−9495.353		−9448.227	
AIC	19,069.757		19,004.707		18,918.454	
AICc	19,069.817		19,004.819		18,918.719	
BIC	19,094.341		19,039.124		18,972.538	

Note. *$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

Table 5 presents the findings of the negative binomial sequential regression analyses with respect to the distance between the victim's and offender's residence. Model 1 includes only the environmental characteristics. Results indicate that shorter distances were traveled between the victim's and offender's residences in rapes perpetrated in residential (β = −0.255, p = .009) and commercial areas (β = −0.336, p = .023) in comparison to those perpetrated in other land use areas. Similarly, in cases where the crime scene was in the same location as the encounter and release location (β = −0.280,

Table 5
Negative binomial sequential regression with the average distance between the victim's residence and the offender's residence as the dependent variable (N = 1009).

	Model 1		Model 2		Model 3	
	β	*S.E.*	β	*S.E.*	β	*S.E.*
Residential	−0.255**	*0.085*	−0.223**	*0.085*	−0.202*	*0.091*
Commercial	−0.336*	*0.146*	−0.338*	*0.146*	−0.366*	*0.146*
Outdoor	0.022*	*0.086*	0.045	*0.087*	0.04	*0.089*
ECR	−0.280***	*0.065*	−0.281***	*0.065*	−0.276***	*0.072*
Deserted place	−0.264***	*0.066*	−0.262***	*0.066*	−0.263***	*0.066*
Compensatory			0.167**	*0.064*	0.191**	*0.065*
Domestic activities/sleeping					0.075	*0.102*
Traveling/driving					0.464***	*0.109*
Socializing with friends					0.202	*0.180*
Prostitution					0.302*	*0.124*
Constant	9.755***	*0.095*	9.656***	*0.102*	9.540***	*0.107*
Likelihood Ratio Chi^2	53.366***		60.081***		84.876***	
Log Likelihood	−10,429.089		−10,425.732		−10,413.334	
AIC	20,870.178		20,865.464		20,848.669	
AICc	20,870.262		20,865.576		20,902.752	
BIC	20,899.679		20,899.881		20,902.752	

Notes. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

p = .000), and where the rape took place in a deserted place (β = −0.264, p = .000) were likely to have shorter distances between the victim's and offender's residence as compared to those cases involving other environmental characteristics. Conversely, the distance between the victim's and offender's residence was likely to be greater if the rape took place outdoors (β = 0.022, p < .024). Model 2 introduces the classifications of offender motivation. As compared to Model 1, all of the variables remained significant except for one; rapes that took place outdoors. In cases involving *compensatory* rapists (β = 0.167, p < .031), the distance between the victim's and offender's residences was likely to be greater as compared to cases involving other motive classifications. Model 3 introduces the victim's activity at the time of attack. All of the variables that were significant in Model 2 remained significant in Model 3. In cases where victims were traveling/driving (β = 0.464, p = .000) at the time of the attack, or engaging in prostitution (β = 0.302, p = .045), the distance between their residence and that of their offender was likely to be greater as compared to cases involving other activities.

5. Discussion

Three key findings emerged from this study. First, in line with previous work (e.g., Barbaree et al., 1994; Berger, 2000; Groth, 1979; Knight & Prentky, 1990), there was clear evidence of the *compensatory*, *sadistic*, *angry/power*, and *opportunistic* motive subtypes in this sample of French rapists. Interestingly, given the large size of the sample used here, the fact that additional motives did not emerge suggests that these classifications are relatively robust and parsimonious. Second, the journey-to-crime, the journey-to-victimization, and the distance traveled between the residences of both the offender and the victim differed by motive to offend. This finding suggests that crime site selection is not a random choice; rather, at least for some offenders, it is a patterned and calculated decision. Third, several pre-crime factors predict distances traveled by offenders and victims to the crime site, as well as the distance between the offender and victim's residence. However, the *influence* of these variables differs depending on the dependent variable of interest.

5.1. Rape distances by motive type

While most studies have demonstrated that offenders commit their crimes close to their residence, less is known about how the victim's journey fairs in comparison. Generally, our findings showed that rapists traveled longer distances to the crime scene in comparison to the victim in all cases. In support of the buffer zone and distance decay concepts (see Brantingham & Brantingham, 1981), none of the rapists offended in the area that *directly* surrounded their place of residence. In terms of actual distances traveled by rapists, there was significant variability across offender motive. *Angry/power* rapists commuted the farthest, while *opportunistic* offenders traveled the least amount of distance. One possible explanation for this finding is that *angry/power* rapists, in comparison to the other subtypes, were more likely to target specific victims for their crimes. Thus, the search for specific victim attributes may have necessitated farther travels in comparison to those offenders who were less discriminatory as to who their victim could be (i.e., *opportunistic* offenders).

Findings also suggested that victims are attacked relatively near to where they live. This finding was also noted by Ceccato (2014) who found that more than half of the rapes in her sample occurred within one kilometer of the women's residence. Underscoring these findings is the notion that the places in which individuals spend the majority of their time and in which they are the most comfortable are also the places in which women, in particular, are at the highest risk of sexual violence. These findings also confirm Chopin and Caneppele's (2019b) suggestion that from a rational choice perspective, offenders may perceive the victim's home and surrounding area as a “safer” environment to commit and complete the crime. This appears to be the case for *compensatory* rapists whose victims are attacked much closer to their residence (average of 3.26 km) than those of other rapist subtypes. One possible explanation for this could be that *compensatory* rapists are less brazen due to their general lack of confidence, and thus use a ruse to lure their victim back to her own private space where it is easier for them to initiate and complete the offense without interruption. Victims of *opportunistic* rapists are assaulted the farthest away from their residence (average of 6.79 km), suggesting that these attacks occur when they are engaged in routine activities away from the home. Regardless of distance measure (from either the offender's or victim's residence to the crime scene), the finding that most rapes occurred relatively close to home is well supported by crime pattern theory which suggests crime opportunities are more abundant in areas where individuals spend the majority of their time.

More variability was found in regards to the average distance traveled between the offender and victim's residence across offending motives. *Opportunistic* rapists were observed to have lived the closest to their victims (average of 4.92 km), indicating that they share the ‘same spatial awareness’ (Brantingham & Brantingham, 1984), whereas *angry/power* rapists lived the farthest away (average of 10.38 km). Taken as a whole, the significant differences in spatial behavior across

motive type outlined above suggest that this is an important element for investigators to consider to seek out possible clues as to how far the victim and offender traveled to the crime scene, and where they reside relative to each other. Failure to disaggregate these journeys based on motive masks the considerable variation that exists in the journeys-to-crime and victimization that could prove useful to the investigation.

5.2. Offense characteristics associated with distance measures

The final aim of this study was to investigate which offense characteristics were predictive of the actual distance traveled between three locations: offender's residence, victim's residence, and the crime scene. We found that rapist motivation, in addition to environmental characteristics and victim activity at the time of attack, predict distances traveled by offenders and victims to the crime scene, as well as the distance between the offender's and victim's residence. Despite temporal variables being theoretically significant, they did not play an important role in the offender's nor the victim's spatial movements. Rather, the physical characteristics of the environment (e.g., residential versus commercial) seem to dictate the type of social activities that will take place there (e.g., sleeping/domestic activities versus prostitution), and thus the profile of victim who will occupy these spaces. While only speculative due to data limitations, this seems to be an important factor when trying to better understand the variability in distance traveled among offenders and victims.

In terms of the average distance traveled by the offender, motivation was the strongest predictor, followed by the victim's activity at the time of the attack. More specifically, *opportunistic* rapists are less likely to travel far from their residence to offend, especially if the offending opportunity arises in a residential land use area during nighttime hours (see also Warren et al., 1995). This finding suggests that rapes that share these characteristics are likely to be committed by offenders who take advantage of crime opportunities within their own neighborhoods. Stevens (1994) similarly found that the majority of sex offenders in his sample described “easy prey” or random opportunity to be the most common criteria for selecting a victim and subsequently initiating an offense. Together, these suggest that the distance traveled by non-*opportunistic* offenders to the crime scene is largely a result of other factors. In our study, one such factor was if the victim was engaged in prostitution at the time of the attack. In these cases, offenders were observed to have traveled farther from their residence as red-light districts are concentrated to only very few zones within any given city (Ashworth, White, & Winchester, 1988).

Environmental characteristics, followed by the victim's activity at the time of the attack, were the best explanatory factors for the two remaining distance measures. Two contexts emerged as contributing to the relative distance between where the victim lived and the crime site. Assaults perpetrated by *angry/power* rapists that were characterized by no mobility (i.e., ECR), occurred in a residential land use area, and when the victim was engaged in domestic activities/sleeping, were more likely to occur closer to the victim's home. Conversely, attacks that occurred in a commercial land use area and while the victim was traveling/driving were likely to have occurred farther away from the victim's residence. This finding is well supported by prior literature that has found that female rape typically occurs “when the victim is on the move, on the way from or to places, often from a bus stop to the victim's residence or from a restaurant to a nightclub, or on the way to/from a subway station” (Ceccato, 2014, p. 103), or while inside a vehicle/taxi (Ceccato et al., 2017). These findings reinforce the notion that certain places and activities that are typically perceived as being safe, may actually put females at a higher risk of rape victimization both nearby and far from their home.

Also of investigative importance is the variables that shed light on how far the victim and offender live relative to each other. Shorter distances were observed when the crime occurred in a residential or commercial land use area, a deserted place, and when there was no mobility during the crime (i.e., ECR). Conversely, these individuals live farther apart when the crime is perpetrated by a *compensatory* rapist, and when the victim is engaged in either traveling/driving or prostitution at the time of the attack. These results contribute to the knowledge base of journey-to-crime distances and offender crime scene behaviors that Santtila et al. (2007) argue is still largely needed.

Lastly, of equal significance to this discussion is those variables that were not predictive of any of the three distance measures. With the exception of the first measure (O—C), the time of the day, day of the week, and the season of the year did not influence the journey-to-victimization nor the distance between the victim's and offender's residence. This was surprising given the theoretical and empirical literature that acknowledges the importance of temporal variations in the occurrence of rape (e.g., Amir, 1971; Ceccato, 2014; Gabor & Gottheil, 1984). While the current data cannot provide an explanation for this finding, the idea that stranger rapes are frequently premeditated to some degree before their occurrence (Beauregard & Leclerc, 2007; Rossmo, 2000) as compared to other crimes that are more impulsive, and thus more likely to be influenced by temporal fluctuations (e.g., domestic violence; see Cohn, 1993), might explain why other factors emerged as being more influential to the spatial movements of offenders and victims.

5.3. Theoretical implications for environmental criminology as applied to female stranger rape

While environmental criminology has not traditionally been used to explain the etiology, decision-making, nor crime scene behavior of rapists, the findings of the current study have promising implications for further developing theory in this field. First, Rossmo et al. (2003) note that “crime pattern theory proposes the existence of individuals motivated to commit crime, where the sources of motivation are diverse, the strength of motivation varies, and its nature varies from affective to instrumental” (p. 22). Given this theoretical proposition, however, only a few studies on rape have acknowledged the importance of motivation in the spatial behavior of offenders (e.g., Santtila et al., 2007; Santtila et al., 2008), but these studies largely categorize motive as being binary: ‘planned’ versus ‘opportunistic’, or ‘instrumental’ versus ‘expressive’. However, as this study and previous scholars have shown (e.g., Reid, Beauregard, Fedina, & Frith, 2014), further variation in the type and strength of motivation of rapists exists within these broad categories. It must be acknowledged within crime pattern theory, then, the importance of not only examining the relationship between motive and the spatial behavior of both offenders and victims for individual crime types, but to further look at the particularities within each crime type as well.

Second, despite the prominent finding in many journey-to-crime studies that rapists offend close to their residence, our results demonstrate that this observation is actually more complex. Clearly, some offenders do limit their criminal activity to locations near to where they spend much of their time (i.e., *opportunistic* offenders), but others are willing to travel longer distances to search for victims and commit rape depending on the context and their motivation (i.e., *sadistic* and *angry/power* types). This ultimately has practical implications for rape investigations as sometimes looking for the offender close to where the crime was committed may be an unproductive venture. Our findings simply point towards the fact that there is heterogeneity among sexual offenders, motivations for committing their crimes, and journey-to-crime and-victimization patterns that should be recognized by scholars and practitioners alike.

6. Conclusion

Besides theory, the findings of this study have implications for police officers who are tasked with the investigation of stranger rapes as well. As mentioned previously, these cases pose considerable challenges

for law enforcement officers due to the lack of available information in most cases about the suspect. Thus, we have shown that by having investigators focus on particular modus operandi variables (e.g., indications that the offender was already familiar with the crime scene or that he specifically targeted his victim, the type of approach that the offender used with the victim, as well as whether the victim was physically tortured, psychologically terrorized, anally penetrated, and suffered severe and extreme physically injury), it is possible for them to infer a stranger offender's motive for committing the assault. This piece of information, on its own, may provide investigators with potentially valuable information about the personal characteristics of the offender, his offending process, and the risk that he will escalate in violence with subsequent victims (e.g., indications of a sadist would likely mean that he will continue to recidivate sexually and that these assaults will be extremely violent in nature) as thoroughly discussed in prior literature.

A second implication of this work is that investigators may be able to use these findings to help predict the relative location of the unknown offender's home base relative to the crime scene and/or the victim's residence, since these latter two locations would likely be known at the time of the police report. For example, inferring the offender's motive for a particular sexual assault will provide the police with an approximate distance of how far the offender lives from the crime scene and the victim's residence, which could be helpful in the prioritization of suspects. Furthermore, using these distance averages as a baseline, investigators may be able to improve their predictive accuracy by recognizing where the offense occurred and the victim's activity at the time of attack, to better tailor the approximate distance the offender may have traveled relative to the place of the crime and/or the victim's residence. This information undoubtedly has utility for better targeting police resources in such difficult-to-solve cases.

Some limitations are present in the current study. First, similar to those noted by Chopin and Beauregard (2019), due to the nature of the data, the cases analyzed in this study represent only those rapes that have been brought to the attention of the police. Thus, these findings may or may not be generalizable to all rape cases involving adult female victims. Second, because these crimes occurred over four decades, there may have been issues of data quality and changes in reporting practices that occurred in official records over this period of time. This may have led to some events being excluded from the current sample. Third, while we hope that these findings will be useful for future investigations involving stranger rape, it is possible that some of the information that we used to classify offender motivations will be unavailable or unobservable by the police after a crime has occurred. Thus, it may become difficult to determine motive based on crime scene behavior in the absence of the offender. Similarly, it could be argued that inferring offender motivation based on crime scene characteristics may prove difficult or in fact be misleading in the absence of speaking with the offender directly; however, offenders may not always have a rationale for their offending behavior, or may even be deceptive about their motive when being interviewed. Thus, we argue that classifying motive according to observable behavioral data, such as what we have done in the current study, can actually overcome both of these limitations (see also Amir, 1971; Palmer, 1988). There may also be other pre-crime factors that we did not take into account that would better explain the variation in distance traveled by both offenders and victims (e.g., the offender's activity in the moments immediately prior to the crime); future research should take this into account. Finally, as is the major limitation with most research on the spatial mobility of crime, it is assumed that the journeys-to-crime and victimization both begin at the place of residence, when in fact, this may not be the case. Thus, it could be that offenders and victims start their journeys from another activity node, such as their place of work or a family member's residence, and therefore these distances would not be reflected in the analyses conducted here.

Future research should investigate possible interaction effects between the temporal, environmental, offender motive, and victim activity variables, to see if those provide a more comprehensive understanding of journey-to-crime and victimization. It would also be interesting to replicate this study with other sub-groups of sexual offenders (e.g., child molesters or sexual homicide offenders), or different victim types (e.g., male victims, elderly victims), to see how the findings would compare. Finally, because localities have different built environments that ultimately influence how far people travel to engage in both their routine and criminal activities, replication of these analyses using local crime data will be the most pragmatic for police investigating stranger rapes within that jurisdiction.

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Appendix A. Appendix

Table A.1
Two-step cluster solution for offender motivation type ($N = 1009$)

	Compensatory		*Angry/Power*		*Opportunistic*		*Sadistic*		X^2
	n	%	*n*	%	*n*	%	*n*	%	
Offender familiar with the crime scene	49	11.89%	151	46.60%	202	100.00%	34	47.89%	432.299***
Offender targeted his victim	0	0.00%	187	57.72%	0	0.00%	17	23.94%	438.643***
Conning (non-coercive) approach	267	64.81%	114	35.19%	154	76.24%	40	56.34%	103.656***
Offender used blitz (coercive) approach	0	0.00%	172	53.09%	0	0.00%	18	25.35%	393.166***
Victim was tortured	0	0.00%	0	0.00%	0	0.00%	71	100.00%	1009.000***
Anal penetration	130	31.55%	101	31.17%	78	38.61%	38	53.52%	16.070***
Psychological terror	6	1.46%	10	3.09%	4	1.98%	9	12.68%	28.034***
Severe/extreme physical injury	25	6.07%	33	10.19%	17	8.42%	16	22.54%	20.807***
Base N	**412**		**324**		**202**		**71**		

Note. $^{**}p \leq .01$; $^{***}p \leq .001$.

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